

App. Serial No. 10/544,216
Docket No.: NL030089 US

Remarks

Claims 1-10 are currently pending in the patent application. For the reasons and arguments set forth below, Applicant respectfully submits that the claimed invention is allowable over the cited reference.

In the Final Office Action dated March 8, 2007, claims 1-10 stand rejected under 35 U.S.C. § 112(2), and claims 1-7 stand rejected under 35 U.S.C. § 103(a) over Sugiura *et al.* (U.S. 6,150,686). Although these rejections are traversed as explained below, Applicant has presented the above minor claim amendments in an effort to facilitate prosecution on the merits.

Applicant respectfully traverses the Section 112(2) rejection of claims 1-10 because the claims satisfy the requirements of Section 112(2). Regarding the phrase "the thickness of the first part of the trench groove is larger than the thickness in a second part of the trench groove," Applicant submits that one of skill in the art would recognize that "the thickness" is referring to the thickness of the liner of a first insulating material found in claim 1 at line 7. Therefore, it would be clear to one of skill in the art that the thickness of the insulating material in one part of the trench groove is being compared to the thickness of the insulating material in another part of the trench groove. Moreover, Applicant notes that this is consistent with the Examiner's interpretation in asserting correspondence between the claims and the Sugiura reference. *See*, the Final Office Action, page 3. Accordingly, the Section 112(2) rejection of claims 1-10 based upon the above mentioned claim language is improper and Applicant requests that it be withdrawn.

Notwithstanding, in an effort to facilitate prosecution, Applicant has amended claims 1-2 and 6-7 to recite that which would have been clear to one of skill in the art (*i.e.*, that the thickness of the insulating material in one part of the trench groove is being compared to the thickness of the insulating material in another part of the trench groove). Therefore, Applicant respectfully submits that Section 112(2) rejection of claims 1-10 cannot stand and should be withdrawn.

The Section 112(2) rejection of claim 6 is also based upon the claim phrase "filling the trench groove at least with a first insulating material and with a first filler material ... wherein the first filler material at least partially fills a remaining part of the trench groove". Contrary to the asserted interpretation of this phrase, claim 6 does not require that the trench

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groove be completely filled with the two materials (the Examiner appears to be reading the claim as requiring that the two materials fill the entire trench groove. The claim phrase is directed to filling the trench groove with at least two materials; one material filling a specific part of the groove and the other material at least partially filling the remaining part of the groove. The remaining part of the trench groove could be completely filled with the first filler material, but this is not required by the claim language. The claim language "filling the trench groove at least with a first insulating material and with a first filler material" does not exclude the groove from being partly filled with a third material, nor does it require the groove to be completely filled with the first insulating and the first filler materials. In view of the above, the Section 112(2) rejection of claims 6-10 is improper and Applicant request that it be withdrawn.

As claims 8-10 are not rejected in view of any prior art, Applicant submits that claims 8-10 are allowable. Thus, in an effort to facilitate prosecution, Applicant has amended claims 1 and 6 to include limitations consistent with those found in claims 8-10. More specifically, claims 1 and 6 have been amended to include limitations directed to a thickness of the liner in the first part of the trench groove being substantially in line with the upper and lower surfaces of the buried layer and being larger than a thickness of the liner in a second part of the trench groove. *See, e.g.*, Figures 1 and 6; and paragraph 0059 of Applicant's specification. The cited portions of the Sugiura reference do not teach that silicon oxide film 14 is substantially in line with the upper and lower surfaces of n-buried layer 18 as in the claimed invention. *See, e.g.*, Figure 1 and the related discussion. Accordingly, the Section 103(a) rejection of claims 1-7 cannot stand and Applicant respectfully requests that it be withdrawn.

Applicant respectfully traverses the Section 103(a) rejection of claims 2 and 7 because the cited portions of the Sugiura reference do not correspond to all of the claim limitations including those directed to the thickness of the first insulating material in the first part of the trench groove being larger than the thickness of the first insulating material in the third part of the trench groove. Thus, the claim limitations require that there be an insulating material in the third part. Irrespective of the Examiner's assertion in both the Advisory Action dated May 16, 2007 and the Final Office Action that zero corresponds to a thickness, the cited portions of Sugiura do not teach a liner/layer of

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insulating material on the portion of the wall of trench 12 that is above oxide film 14 as required by the claim limitations. The Examiner asserts that "the insulator at 14 has no insulator at all above it, so its thickness is greater than "the thickness" of the insulator above, because anything is larger than zero." Applicant agrees with the Examiner's interpretation that the cited portions of the Sugiura reference do not teach any insulator above the silicon oxide film 14. As such, there is no correspondence between the claim limitations which require that there be first insulating material in the third part of the trench groove, which is above the first part. Therefore, the Section 103(a) rejection of claims 2 and 7 is improper and Applicant requests that it be withdrawn.

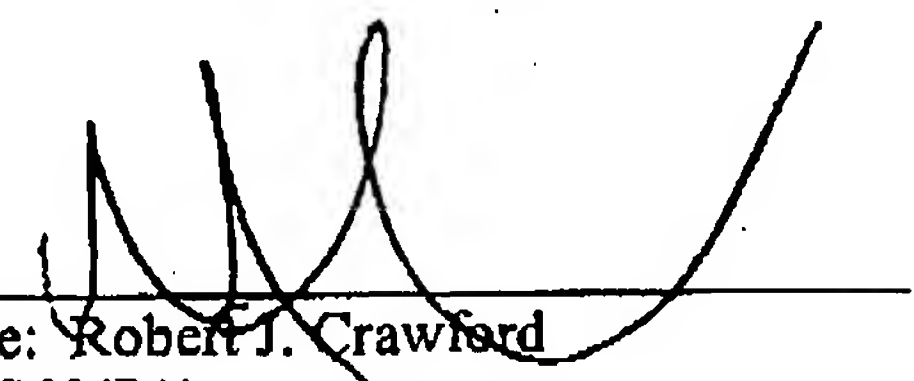
Applicant respectfully traverses the Section 103(a) rejection of claim 3 because the cited portions of the Sugiura reference do not correspond to all of the claim limitations including those directed to the first part of the trench groove being completely filled with the first insulating material. The Examiner asserts that oxide film 14 corresponds to the first insulating material. Claim 3 requires that the first insulating material completely fills the first part of the trench. The Examiner's asserted correspondence to the first part of the trench is filled with an electrode 15. More specifically, there is no portion of the trench that is completely filled with the first insulating material (asserted to be oxide layer 14). *See, e.g.*, Figures 1 and 2. Moreover, the Examiner's statements in the Advisory Action referring to aspects of a filler material are inapplicable as claim 3 clearly recites completely filling the first part of the trench with the first insulating material.

Moreover, the Examiner's statements in the Advisory Action regarding Applicant's arguments pertaining to limitations related to a partial or complete filling of the trench are unrelated to claim 3. Applicant notes that the referenced arguments (*see, e.g.*, the paragraph beginning on the bottom of page 5 of the Final Office Action Response and Amendment dated April 18, 2007) were made in regard to claim 6, not to claim 1 as asserted by the Examiner. For at least the aforementioned reasons, the Section 103(a) rejection of claim 3 is improper and Applicant requests that it be withdrawn.

In view of the remarks above, Applicant believes that each of the rejections has been overcome and the application is in condition for allowance. Should there be any remaining issues that could be readily addressed over the telephone, the Examiner is asked to contact the attorney overseeing the application file, Mike Schmitt, of NXP Corporation at (408) 474-5015.

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